

APPENDIX "A"
ANALYTICAL PARAMETERS AND METHODS REQUESTED

Analytical Parameter(s)*	Reference	Method Numbers	Media
1 MBTEXN ¹	SW 846 ²	E602/E624/SW 8021B/SW 8260B/E502.2/E524.2	Soil, Water
2 VPH ³ (Includes MBTEXN)	MADEP, 1998 ⁴	January 1998 Massachusetts method as modified by Montana DEQ VPH in air is not the same as APH	Soil, Water, Air (Tedlar Bag)
3 EPH ⁶	MADEP, 1998	January 1998 Massachusetts method as modified by Montana DEQ	Soil, Water
4 EPH Screen	MADEP, 1998	Same as Above (SAA)	Soil, Water
5 EPH Fractionation	MADEP, 1998	SAA	Soil, Water
6 EPH with PAHs	MADEP, 1998	SAA	Soil, Water
7 Fuel oxygenates - ethanol/methanol, MTBE, tertiary-amyl methyl ether (TAME), ethyl tertiary-butyl ether (ETBE), diisopropyl ether (DIPÉ), tertiary-amyl ethyl ether (TAEÉ), tertiary-butyl alcohol (TBA), and tertiary-amyl alcohol (TAA)	SW 846	EPA 8260B	Soil, Water
8 Lead Scavengers - 1,2-dibromomethane (EDB)	SW 846	EPA 8011 EPA method 504.1/EPA Method 502.2/524.2/SW	Soil, Water
1,2-dichloroethane (1,2-DCA)		EPA Method 502.2/524.2/SW 8260B	Soil, Water
9 Carbon Scan Fingerprinting	NA	GC-FID	Soil, Water
10 TPH ⁷ by Infrared Spectroscopy	EPA, 1983 ⁸	EPA 418.1 EPA, 1983	Soil, Water
11 Oil and Grease	SW 846	EPA 9071B	Soil, Water
12 Purgeable Organics	SW 846	EPA 8260B	Soil, Water
13 Regulated and Unregulated Volatile Organic Compounds (VOCs)	EPA, 1988 ⁹	EPA 524.2	Water
14 Semi-Volatile Organic Compounds (SVOCs)	SW 846	EPA 8270C	Soil, Water
15 Organochlorine Pesticides	SW 846	EPA 8081A	Soil, Water
16 Polychlorinated Biphenyls	SW 846	EPA 8082	Soil, Water
17 Chlorinated Herbicides	SW 846	EPA 8151A	Soil, Water
18 Ethanol/Methanol	SW 846	EPA 8015B	Soil, Water
19 Methane	SW 846	EPA 8015B Modified	Water
20 Ignitability	SW 846	EPA 1010A	Liquid
21 Ignitability- Flash Point	SW 846	EPA 1010A	Liquid
22 Ignitability - Burning Rate	SW 846	EPA 1030	Solid
23 Corrosivity	SW 846	EPA 9040C EPA 9045D	Water Solid
24 Cyanide Reactivity	SW 846	Sec. 7.3.2	Water, Other ¹⁰
25 Sulfide Reactivity	SW 846	Sec. 7.3.2	Water, Other
26 Total Organic Carbon	EPA, 1983 A.S.A. Monograph	EPA 415.2 No. 9 29 - 3.5.2	Water ¹¹ Solid
27 Toxicity Characteristic Leaching Procedure (TCLP)	SW 846	EPA 1311	Solid, Liquid
28 TCLP - ZHE	SW 846	EPA 1311	Solid
29 TCLP-Metals Digestion	SW 846	EPA 3010	Liquid
30 TCLP- Metals (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)	SW 846	EPA 6010B, 6020, 7060A, 7061A, 7080A, 7081, 7130, 7131A, 7190, 7191, 7420, 7421, 7470A, 7471A, 7740, 7741A, 7742A, 7760A, 7761	Solid, Liquid
31 TCLP - Volatiles	SW 846	EPA 8260B	Solid, Liquid
32 TCLP - Semivolatiles	SW 846	EPA 8270C	Solid, Liquid
33 TCLP - Pesticides	SW 846	EPA 8081A	Solid, Liquid
34 TCLP - Herbicides	SW 846	EPA 8151A	Solid, Liquid
35 Synthetic Precipitation Leaching Procedure (SPLP)	SW 846	EPA 1312	Solid, Liquid
36 Acid Digestion	EPA 1994 ¹² SW 846	EPA 200.2 EPA 3050B/7471	Other All
37 Aluminum	SW 846 EPA 1994	EPA 7020, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
38 Antimony	SW 846 EPA 1994	EPA 7040, 7041, 7062, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
39 Arsenic	SW 846 EPA 1994	EPA 7060A, 7061A, 7062, 7063, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
40 Barium	SW 846 EPA 1994	EPA 7080A, 7081, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
41 Boron	SW 846 EPA 1994	EPA 6010B, 6020 EPA 200.7, 200.8	Extract, Water
42 Beryllium	SW 846 EPA 1994	EPA 7090, 7091, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water

43	Cadmium	SW 846 EPA 1994	EPA 7130, 7131A, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
44	Chromium	SW 846 EPA 1994	EPA 7190, 7191, 6010B, 6020, EPA 200.7, 200.8, 200.9, and low level	Extract, Water
45	Copper	SW 846 EPA 1994	EPA 7210, 7211, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
46	Iron	SW 846 EPA 1994	EPA 7380, 7381, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
47	Manganese	SW 846 EPA 1994	EPA 7460, 7461, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
48	Lead	SW 846 EPA 1994	EPA 7420, 7421, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
49	Mercury	SW 846 EPA 1994 EPA 1983	EPA 7470A, 7471A, 7472, 6010B, 6020 EPA 200.8 EPA 245.1, 245.2	Extract, Water, Water
50	Nickel	SW 846 EPA 1994	EPA 7520, 7521, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
51	Selenium	SW 846 EPA 1994	EPA 7740, 7741, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
52	Silver	SW 846 EPA 1994	EPA 7760A, 7761, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
53	Thallium	SW 846 EPA 1994	EPA 7840, 7841, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
54	Zinc	SW 846 EPA 1994	EPA 7950, 7951, 6010B, 6020 EPA 200.7, 200.8, 200.9	Extract, Water
55	Cyanide	EPA 1983	EPA 335.3	Soil, Water
56	Weak Acid Dissociable (WAD) Cyanide	ASTM 1998 ¹³	ASTM D2036	Soil, Water
57	Perchlorate	EPA 1999 ¹⁴	EPA 314.1	Water
58	Iron Bacteria	A1998 ¹⁵	A 9240 B/BART	Water
59	Sulfate-Reducing Bacteria	A1998	A 9240 B/28-day indicator	Water
60	Total Coliform Bacteria/E. coli	A1998	A 9223 B	Water
61	Heterotrophic Plate Count	A1998	A 9215 B	Water
62	pH	EPA/600/4-79/020	EPA 150.1	Water
63	Alkalinity	NA	EPA 310.1	Water
64	Isotopic Uranium	EPA 821-C-99-004	EPA 907.0	Water
65	²²⁶ Radium	EPA 821-C-99-004	EPA 903.0	Water
66	Asbestos	NA	EPA 600/M4-82-020	Solid
67	Bulk Density	NA	NA	Soil
68	Soil Moisture	USDA Handbook 60	Method 26	Soil
69	Lime Requirement, SMP Single Method	ASA Mono #9 ¹⁶ , Part 2	ASA Method 12-3.4.4	Soil
70	Acid Base Potential	NA	Calculation	Soil
71	Fertilizer Recommendation	based on results of 72-82	NA	Soil
72	pH, Saturated Paste	ASA Mono #9, Part 2	ASA Method 10-3.2	Soil
73	Nitrate	ASA Mono #9, Part 2 (extract only)	ASA Method 38-8.1 EPA 353.2	Soil Water
74	Sodium	ASA Mono #9 (ext)	EPA 6010B/EPA 6020	Soil Water
75	Sulfate	ASA Mono. #9, Part 2 (extract only)	ASA Method 28-5.1 EPA 300.0	Soil Water
76	Conductivity	ASA Mono. #9, Part 2	ASA Method 10-3.3	Soil
77	Texture (PSA ¹⁷)	ASA Mono. #9, Part 1	ASA Method 15-5	Soil
78	Lime as CaCO ₃	USDA Handbook 60	ASA Method 23C	Soil
79	Potassium	ASA Mono #9, Part 2 (extract only)	ASA Method 13-3.5 EPA 6010B/EPA 6020	Soil Water?
80	Organic Matter	ASA Mono. #9, Part 2	ASA Method 29-3.5.2	Soil
81	Avail. Phosphorus	ASA Mono. #9, Part 2 (extract only)	ASA Method 24-5.4 and 5.1 EPA 365.1	Soil
82	Calcium, sat paste	ASA Mono. #9, Part 2 (extract only)	ASA Method 10-2.3.1 EPA 6010B/6020	Soil
83	VOCs in Air, collected in Summa Canisters	Compendium ¹⁸	TO-15, TO-15 SIM	Air
	VOCs/SVOCs in Air, collected in multibed sorbent tube		TO-17	Air
84	VPH or APH ¹⁹ in a Summa Canister	MADEP 2004, 2000	NA	Air
85	Dioxins/Furans	SW 846	EPA 8290	Water, Soil, Other
86	Methane	NA	SW 8015M	Air (Tedlar Bag)
	Methane, ethane, ethene		GC-FID/Kampbell (SW 8015 Mod.)	Water

NOTES

- ¹ MBTEXN: Methyl Tertiary Butyl Ether, Benzene, Toluene, Ethylbenzene, Xylenes, and Naphthalene
- ² SW 846: Test Methods for Evaluating Solid Wastes, Final Updates I - III U.S. Environmental Protection Agency, 1992 - 2004
- ³ VPH: Volatile Petroleum Hydrocarbons
- ⁴ MADEP, 1998: Massachusetts Department of Environmental Protection, Methods for Determination of Volatile Petroleum Hydrocarbons (VPH) and Extractable Petroleum Hydrocarbons (EPH)
- ⁵ NA: Reference or Method number not available
- ⁶ EPH: Extractable Petroleum Hydrocarbons
- ⁷ TPH: Total Petroleum Hydrocarbons
- ⁸ EPA, 1983: Methods for Chemical Analysis of Water and Wastes, U.S. Environmental Protection Agency, EPA-600 / 4-79-020, March 1983
- ⁹ EPA, 1988: Methods for Determination of Organic Compounds in Drinking Water, U.S. Environmental Protection Agency, EPA/600/4-88/039
- ¹⁰ Other: All Non-aqueous, Non-gaseous Media
- ¹¹ All: All Nongaseous Media
- ¹² Methods for the Determination of Metals in Environmental Samples, U.S. Environmental Protection Agency, EPA/600/R-94/111, May 1994
- ¹³ ASTM 1998: American Society of Testing Materials; Standard Test Methods for Cyanides in Water, 1998
- ¹⁴ EPA 1999: Determination of Perchlorate in Drinking Water Using Ion Chromatography, November 1999
- ¹⁵ A1998: Standard Methods for the Examination of Water and Wastewater, 20th ed. 1998.
- ¹⁶ ASA Mono #9: American Society of Agronomy Monograph #9; The ASA methods listed are soil extraction methods.
- ¹⁷ PSA:Particle Size Analysis; includes % sand, silt, clay
- ¹⁸ Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, 2nd Edition, January 1999
- ¹⁹ APH: Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), Draft 1.0, MADEP, February 2000

*Required reporting values set forth in DEQ-7 must be achieved, unless otherwise authorized by the Department

For soils and air, the Department will require reporting limits be those provided in Montana Tier 1 Risk-Based Corrective Action Guidance for Petroleum Releases, the US EPA Regional Screening Level (RSLs), or the best achievable practical quantitation

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